a concise description of each species. This includes the local name or names (if any); its distribution in Australia; its status—whether stationary or migratory, comparative abundance, &c.; the kind of country it frequents; a short description of its size and plumage, and a few words as to its song or other notes, and its food. All the species are illustrated, and in the majority of cases are figured in colours as well as in black and white. The illustrations are, with few exceptions, from specimens in the National Museum.

In addition to this useful and necessary, but somewhat dry, portion of the handbook, about a third of the little volume is occupied by a most interesting lecture on the Australian avifauna. Thus the book appeals to a much wider class of naturalists than that for which it has been mainly written. For the ornithologists of other countries will find in it an excellent introduction to, and a valuable account of, the birds of a very interesting part of the world. Mr. Tate in his introduction alludes to the growth of a generation trained to look upon the characteristic beauties of Australia with an appreciation almost unknown to their pioneering fathers and mothers, and he combats the popular belief that their birds are songless. An index to the coloured plates and a general index make reference to any particular bird easy.

Unity in Nature: an Analogy between Music and Life. By C. E. Stromeyer. Pp. x+589. (London and Manchester: Sherratt and Hughes, 1911.) Price 12*s.* 6*d.* net.

THIS is a readable discourse on things in general, from physics and astronomy to ethics and politics. As the title indicates, the author expounds certain musical analogies, such as the relation between intervals in the octave and distances in the solar system; but, after the first few sections, the matter of the book becomes more general. There is a good deal of amusingly-put speculation about the kind of world that a "flatland" of two dimensions would be (as sketched by Mr. Hinton), and this, of course, leads to fourth-dimensional space and what might happen there. Then, after a chapter on sexual ethics in which a more or less Schopenhauerian doctrine is taught—with much apt illustration, historical and geographical—we come to the female suffrage question, on which the author has vigorous opinions. If women get the vote, "there is every probability that female Members of Parliament would soon be elected; these would decide to elect female Prime Ministers, and as Parliament claims to be omnipotent, there is the prospect of having autocratic female rulers" (p. 507). Also on the disproportionate number of lawyers in Parliament Mr. Stromeyer has some cutting and probably justified remarks; and on education he enters a wise protest against too much classicism. The punctuation of the book leaves something to be desired, and on p. 104 "bromide" appears several times when "bromine" is meant; but these are small details. The author shows wide culture and has a pleasant style.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

Prof. Bergson and the Eye of Pecten.

I FIND that Prof. Bergson in his Philosophies has been making use of a comparison between the eye of Pecten, the scallop, and the vertebrate eye. This comparison is used as the basis of some far-reaching conclusions, and therefore it becomes important to direct the attention of readers of NATURE to the fact that the example taken is an extremely bad one. Prof. Bergson states that the eye of Pecten agrees in the most minute details with the vertebrate eye. Now there is no resemblance whatever either in structure or development between the two. The only feature possessed in common by both eyes is an inverted retina, and this is by no means unique in the animal kingdom.

W. J. DAKIN.

University of Liverpool, March 19.

Mersenne's Numbers.

AT various times NATURE has inserted notices of the successive discoveries in relation to Mersenne's Numbers. In the issue of August 12, 1909, Colonel Cunningham's discovery that 228479 was a factor of 2^p-1 when $p=71$ was announced: the other factor was 103343556363337793, but whether this was a prime or not was left undetermined. The same result was discovered last January by Mr. Ramesam, of Mylapore, Madras, and he subsequently resolved the larger factor into the product of 48544121 and 212885833. I think these results may be of interest to some of your readers.

W. W. ROUSE BALL.

Trinity College, Cambridge, March 23.

The Electrolytic Transportation of the Active Deposit of Actinium through Pure Water.

IN the course of some detailed investigations on the conditions of the electrolysis of some radio-active products, I have encountered in the case of actinium the following phenomenon. The products of the active deposit of actinium, though apparently not soluble in water under ordinary conditions, under the action of electric force could be driven from the anode in the state of ions into the water, and eventually transported to the kathode. The experiments were as follows.

The active deposit of actinium was collected on the surface of a platinum plate exposed during some hours as a negative electrode in the emanation of actinium. Immediately after the removal of the plate from the emanation, its activity was measured by means of an electrometer, and the beginning of the curve of its decay was determined. The plate was then immersed in pure, several times distilled water, and formed the anode during the electrolysis of the water. The kathode was also a platinum plate. The activity of the anode was again measured after the electrolysis. It could be seen that the plate was in certain conditions deprived by the electrolysis of a great part of its activity, especially in the case when a very great electromotive force (220 or 440 volts) was applied. If the current passed through the water during a longer time (2 or 3 min.), and the distance between the electrodes was not too great (1 or 2 cm.), a great part and often the total activity lost on the anode could be detected on the kathode. The activity of the kathode proceeded not only from actinium C and probably actinium D, but also the product

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actinium B was undoubtedly present. (New nomenclature after Rutherford and Geiger, *Phil. Mag.*, 22, p. 621, is used throughout this communication.)

Closer investigations of the conditions of this phenomenon established the fact that this removal of the active products from the anode took place only in the case when the activated plate serving as anode was used during a preceding electrolysis of water as kathode, or, in other words, was previously electrolytically saturated with hydrogen. This saturation of the plate with hydrogen was found as the necessary condition for making possible the removal of the radio-active products from the anode. The atoms of the active deposit were driven under the action of the great applied electromotive force as ions into the pure water. If the plate had been previously sufficiently saturated with hydrogen, and used then as anode, it was possible by applying a great P.D. to drive from it into the water in a few seconds a great part, viz. up to two-thirds, of the active products deposited on it. On the other hand, it was not possible to deprive the plate of its total activity even by applying a P.D. of 840 volts, nor by electrolysis during half an hour. The more detailed results of these investigations will be given elsewhere. TADEUSZ GODLEWSKI.

Lemberg, Physical Laboratory of the Technical High School, March 18.

Autophanous Eyes.

I HAVE been greatly interested by the correspondence lately appearing in NATURE on the subject of eyes gleaming in the dark, and there are one or two points about which I should much like to hear a little more.

With regard to human eyes never glowing, I knew one case some years ago of a young Scotch girl whose eyes glowed with a distinct deep-red light. She was a fair-complexioned girl with auburn hair and the peculiar red-brown eyes which go with that colouring.

On the subject of cats' eyes, can anyone tell me why the glow is invariably red in blue-eyed cats and green with yellow or green eyes, *as the glow is not from the iris, but from the tapetum?* I had a half-Persian cat for years with one blue and one yellow eye, and in the dark they were perfect little "port" and "starboard" lights. The red glow of the blue-eyed cat, whether Persian or Siamese, is a deep ruby (not spinel like a mouse's eyes), and is noticeable even with tiny kittens before the colour of the iris is developed at all.

With Persian kittens it is possible to tell as soon as their eyes are open whether they will have blue or yellow eyes by placing them so that the glow can be seen, *i.e.* with a light in line with the observer's own eyes, those which will later develop a blue iris showing like rubies, and the future yellow or green iris like emeralds. Having at present six Siamese cats (fawn-coloured, with deep-blue eyes) and a Persian (black, with yellow eyes), I have considerable opportunities of observing them.

CHARLOTTE I. WHEELER CUFFE.

Brachead, Kokine, Rangoon, March 1.

THE phenomenon of "glowing" eyes (autophanous or not) is certainly observed in man. Without taking much interest in the matter, I have noticed three cases, one abroad and years ago, and the other two quite recently in London. In Room 10 of the L.C.C. Technical Institute, Dalston Lane, N.E., with all lights switched on, I observed the phenomenon over and over again by standing between the lecturer's table and the front bench and looking down at the student sitting in the middle (who should be looking up at you). I should add that I assumed the matter to be a function of the position after I had seen it in two students; before then I thought it was a peculiarity of the one student. H. DE S.-P.

Sibpur College, Calcutta, March 7.

RAND GEOLOGY.[1]

IN no other part of the world is the work of the geologist linked up with such varied interests as in the little strip—some fifty miles long—of high tableland in the Transvaal known as the Witwatersrand, on which are situated some sixty producing gold-mines with an annual output of 350 *tons* of fine gold, worth 35,000,000*l.*; and, indeed, in no other district has the geologist such opportunities for prosecuting his researches as are afforded by the innumerable prospecting trenches, shafts, and deep borings that have been put down on the Rand in the search of extensions, along the strike and on the dip, of the auriferous conglomerates. Hundreds of thousands of pounds have been spent on prospecting work of this nature. In one area alone near the Springs, in the East Rand, the writer of this review had the technical supervision of a series of deep borings, costing above 30,000*l.*, and successfully located the eastern end of the Witwatersrand syncline, with its valuable gold-bearing seam there concealed beneath a thousand-foot cover of the later unconformable Dolomite formation.

The Transvaal Geological Survey, which, since its reconstruction after the war, has been working mainly in the northern part of the Transvaal, has at last broken ground on the Witwatersrand, and the report for 1910 contains an important instalment of this work, in which Dr. Mellor[2] summarises the results of his mapping of the lower Witwatersrand beds between Maraisburg and Rietfontein, an area including the municipality of Johannesburg and the Bezuidenhout valley, the geological structure of which presents so many points of interest. The main features of this area have long been known: they were sketched broadly by Walcot Gibson in a paper read before the Geological Society in 1892; and the boundary lines of the various subdivisions of the Witwatersrand beds were mapped by Messrs. Hatch and Corstorphine, and published in the Transactions of the Geological Society for South Africa for 1904.

Dr. Mellor's mapping of these subdivisions agrees in the main with that of his predecessors; but he explains the duplication of the lower Witwatersrand beds by a new reading of the faulting, which on his view took place subsequently to the extrusion of the Klipriversburg amygdaloid. His map also records a hitherto unnoticed strip of sheared granite on the farm Rietfontein No. 145, that throws fresh light on the age of the movements responsible for the dislocations. The publication of the further work of the Survey on the Rand, especially at its extreme eastern and western ends, will be awaited with interest.

F. H. H.

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[1] Report of the Geological Survey for 1910, Union of South Africa Mines Department, Pretoria, 1911. Pp. 113, with 9 plates and 5 maps Price 7*s.* 6*d.*

[2] "The Geology of a Portion of the Central Witwatersrand." By E. T. Mellor. Pp. 22–38 of the Report.

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